

heater groups with at least a portion of a microfluidic cartridge in contact with the surface.

15. A diagnostic apparatus configured to carry out PCR on a number of samples in parallel, wherein the apparatus utilizes a heater unit of claim **1** to apply thermal cycling to each of the samples.

16. A heater substrate comprising:

a plurality of groups of resistive heaters, and at least one temperature sensor per group of heaters,

wherein the substrate has a surface configured to make thermal contact with a microfluidic substrate having a plurality of PCR reaction chambers, and to deliver heat from one or more of the plurality of groups of resistive heaters to one or more of the PCR reaction chambers so

that a PCR reaction takes place therein, and wherein the heat delivery from each group of resistive heaters is controlled by sensing temperature using the at least one temperature sensor of the group.

17. The heater substrate of claim **16**, wherein the substrate is made of one or more materials selected from the group consisting of: glass, fused silica, and quartz.

18. The heater substrate of claim **16**, wherein the plurality of groups of resistive heaters are arranged into lanes, such that each lane corresponds to a PCR reaction chamber in the microfluidic substrate.

19. The heater substrate of claim **18**, wherein there are 12, 24, 48, or 96 lanes.

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